

in his gracefully fluent yet finished style, and then come Blaserna's polariscopic experiments, clearly and energetically expressed, and, as far as I can judge, affording most conclusive results. It is not a little remarkable how much is contributed towards the value of the observations by the manner in which each observer relates them. The descriptions are given with such charming naïveté and absence of affectation, that the reader can appreciate almost the exact degree in which the writer's hand shook as he manipulated his instrument, not to speak of the degree in which his assertions can be relied upon for accuracy or freedom from bias.

JOHN BRETT

NOTES

M. JANSSEN has been elected a member of the Astronomical Section of the French Academy, the votes recorded for him being 42, against 13 for M. Loewy, and 1 for M. Wolff.

AT a recent meeting of the Natural Science Section of the Literary and Philosophical Society of Sheffield, a discussion took place on "The Attitude of the State to Science," in which Dr. Hime, Mr. Alfred H. Allen, Mr. H. C. Sorby, F.R.S., and Mr. J. Spear Parker successively took part, and the opinion of the meeting was embodied in the following resolution, which was passed unanimously:—"That this meeting deplores the supineness of the Government with respect to science, and believes that the national recognition of research, and the establishment of better means of rewarding discoverers, would be a direct benefit to the country."

IN order to remove any apprehension that might arise in the minds of some members of the Anthropological Institute (particularly of those residing in the country), from statements made that, in consequence of the recent change in the composition of the Council, a preference would be given to papers of an ethnographical class over those relating to other branches of anthropology, the director, with the full concurrence of the president, has thought it advisable to assure the members of the Institute that no such result need be feared. Papers on every branch of anthropology will always be cordially received, provided they comply with the requirements demanded in all communications to a Scientific Society intended for publication, amongst which, a very essential one is, that they should contain either "new facts or new applications of admitted facts." As a further assurance that all proper subjects will receive due and equal attention, it may be well to state in general terms what may be regarded as proper subjects to be brought before the Anthropological Institute. They may be included under the following heads:—(1) The Physical History of Man and of the Human Race; (2) Psychology; (3) Comparative Philology; (4) Priscan Archaeology, *a* Prehistoric, *b* Protohistoric; (5) Descriptive Ethnography, comprising the Reports of Travellers and Explorers on the Physical Characters, Derivation and Relation, Manners, Customs, Religion, Language, &c., of various Races or Nations; (6) Comparative Ethnography; (7) The Relations between Civilised Man and Aboriginal Savage Peoples. In this programme it will be seen that any subject properly coming under the cognizance of the anthropologist may find a place. And in order to insure confidence that each and every subject will receive due attention, it is suggested that committees might, if thought desirable, be formed of such members of the institute as may take a special interest in any of the above branches of inquiry, whose function would be, each in its own sphere, to promote

the collection of materials and the production of papers relating to the subject in which they may feel particular interest. In this way it is clear that all the subjects will be placed on an equality, and to be hoped that each in its turn will receive the same attention.

SOME weeks ago we expressed a hope that the vacant Swiney Lectureship would not be given to one who is already well off, but to some well-qualified young man, who would thus have leisure to perform work of high scientific value. Our hope, we are glad to see, has been essentially fulfilled in the appointment of Dr. Carpenter, who, unusually young in spirit, assuredly deserves the leisure which this appointment will ultimately help to bring him, leisure which, we have good reason to believe, will be devoted to the completion of work of very high scientific value indeed. Few men have devoted gratuitously more of their time to the public benefit, and we believe that he accepts the appointment mainly in order that he may have a good opportunity of working out in fuller detail the applications to geology of the inquiries in which he has been engaged during the last few years. Dr. Carpenter, we understand, has had by him for years, the material, fully worked out, of important papers which he has had no time to produce. Dr. Carpenter has once before held the Swiney Lectureship, and it has been offered to him again without any solicitation on his part.

ON Monday last, in the first of his Hunterian lectures for this year, Prof. Flower drew special attention to the peculiarities of a new animal discovered by Prof. Marsh, of Yale College, and named by him *Dinoceras mirabilis*. This remarkable ungulate, nearly the size of the elephant, was obtained from the Eocene beds of the Rocky Mountain region. It possessed osseous cores for three pairs of horns, which rise successively one above the other; a supra occipital crest is greatly developed, projecting obliquely backward beyond the condyles. The posterior pair of horns arise from this crest, the median from the maxillaries, and the anterior from the tips of the nasals. The canines are greatly developed, and the upper incisors are wanting. The skull is unusually long and narrow, and carries six small molar and premolar teeth. The extremities resembled very nearly those in the proboscidea, but were proportionately shorter. The femur possessed no third trochanter and no pit for the ligamentum teres. It therefore possesses characters allying it with the perissodactyles as well as the proboscidea.

PROF. MARSH has also drawn attention to a new sub-class of fossil birds from the cretaceous shales of Kansas. The specimens, while possessing the scapular arch, wing, and leg-bones of the truly ornithic type, present the very aberrant conditions of having biconcave vertebrae and well developed teeth in both jaws. These teeth are quite numerous and implanted in distinct sockets; the twenty in each ramus of the lower jaw are inclined backwards and resemble one another. The maxillary teeth are equally numerous and like those in the mandible. The sternum have a carina and elongated articulations for the coracoids. The lower of the posterior extremities resemble those of swimming birds. The last sacral vertebra is large, so it may have carried a tail. Professor Marsh proposes the name *Odontornithes* for the name of the new sub-class, and *Ichthyornithes* for the order to contain this remarkable species, which is about the size of a pigeon.

AT a meeting of the Senate of the University of London held last week, a resolution was passed by a majority of two, that it is desirable to make Greek an optional subject at the Matriculation Examination. The practical effect of the carrying out

of this regulation will be, that while those who are intending to proceed to degrees in Arts will continue to take Greek at the matriculation, as a matter of course, it will not be required from those who are going on to degrees in Science or Medicine.

MR. A. W. BENNETT, M.A., B.Sc., F.L.S., has been elected Lecturer in Botany at St. Thomas's Hospital School of Medicine, in the place of the Rev. J. W. Hicks. A vacancy is thus caused in the Lectureship on Botany at the Westminster Hospital School.

THE following new candidates for the Professorship of Geology at Cambridge are announced:—Mr. William King, Professor of Mineralogy and Geology, Queen's College, Galway; and Mr. P. Brodie, M.A., F.G.S., of Emmanuel College, and Vicar of Rowington.

THE office of Chief Assistant in the Observatory, Cape of Good Hope, will be filled up by open competition on March 18 next, and the following days. Candidates must be between eighteen and twenty-five years of age, and the salary commences at 320*l.*, rising 10*l.* a year to 450*l.*

WE are really sorry to hear that the much-talked-of Arctic expedition of M. Pavy, who was recently fabled to have discovered an Arctic Continent, has vanished into worse than "thin air." It is perhaps unprecedented in the annals of science that the funds meant to be devoted to a noble and heroic purpose, should be literally wasted in riotous living. We hear, on too good authority, alas, that M. Pavy's explorations have been confined to certain not unknown phases of "life" in San Francisco.

COAL has been discovered on the railway from Mollendo to Arequipa in Peru. The seam is four yards thick. The coal has been reported as of good quality, and it is already being used on the railway.

DR. REISS, one of two German travellers in Ecuador, has succeeded not only in ascending Sotopax, but in entering the crater.

A GERMAN from Berlin has been for some time at Panama butterfly hunting. His first remittance was one hundred pounds' worth of butterflies.

ON December 28, 1872, a slight shock of earthquake was felt at Goalpara in Northern India, and again on January 3.

ON December 28, 1872, a strong earthquake was felt at 10 A.M., doing much damage at Chinameca, Salvador, Central America. It is attributed to the volcano of San Vicente, now in eruption.

ON January 1 there was a slight shock of earthquake at Guayaquil.

THE *Times of India* reports a sharp shock of earthquake which was felt on January 7, about 4 P.M., at the camp between Sultanpore and Fyzabad, in Oudh.

THE great shock of earthquake in Samos on January 31 happened at 1.10 A.M., and lasted 10 seconds. Several houses were thrown down, and many damaged.

THE French authorities at Tahiti report in their official journal that, in consequence of changes in the coast line and reefs, new rules for navigation have been issued. They announce, also, that the island placed in 21° 50' S., and 152° 20' W., does not exist, as the place has been sailed over by three vessels. Captain Truxton, of the U.S. ship *T. Jamestown*, has informed them that he has passed over the position of a reef assigned to 24° 45' S. and 150° 40' W., without seeing any token of danger.

M. DE FONVIELLE has been authorised by the French Academy to make a series of experiments on a new lightning conductor which he has devised.

THE Report of the Marlborough College Natural History Society for the half year ending Christmas, 1872, contains much that is of considerable interest and value, though we are sorry to see from the very honest preface, that the Society is not in so satisfactory a condition as it ought to and might be. While admitting that a fair amount of work has been done, the preface complains of the lack of interest in the work of the Society, and the comparatively small amount of energy displayed by many of the members. With regard to nearly all the sections, the tone of the preface is desponding, though hopeful that a change for the better may take place next year. The Society contains some excellent workers, who have shown no disposition to relax their efforts, and we earnestly hope that their example will be largely contagious, and that the next report will be written in a very different tone. It is a pity that a society so favourably situated in many respects as this is should not produce more abundant and more valuable results. The geological section, we are sorry to see, is nowhere, mainly for want of a permanent head. The society is also very much cramped for want of a suitable building for the museum. We hope this report will stimulate all the members to renewed activity; let them take to heart the very excellent advice given in the paper on "An Ideal School Natural History Society," by Mr. E. F. im Thurm, who deserves great praise for his efforts on behalf of the society. Appended are reports of the out-door work done in entomology and botany during the half year, and a long and very interesting paper by the Rev. J. A. Preston, describing what he saw on a recent visit to Brazil. The concluding article of the Report is Part I. of a carefully compiled descriptive Catalogue of the Archæological Collection of the Society, by Mr. F. E. Hulme, which is accompanied with a beautifully executed illustration of some of the articles in the collection.

AT the first meeting of the Sheffield Naturalists' Club held a few days ago, Mr. H. C. Sorby, the president, delivered a very excellent inaugural address, in which he gave his views as to the objects of the formation of such a society. Such a society as this, he said, had two characters. First of all, the subjective influence it had on the members who composed it. The study of natural history was most desirable in many ways. Man had a certain amount of energy; it must be expended in some way or other, and the examination into natural history furnished them with a study which was advantageous to both body and mind. By being joined together in a society they might greatly help one another. With regard to the objective value of such a society as this, he thought they ought not to limit their efforts to the mere making out of accurate lists of flora and fauna which occurred in the district. The efforts of naturalists also ought to be devoted to the discovery of general philosophical principles, as applied to both animals and plants. He thought they could learn a great deal more by the careful study of the commonest things than by looking for rarities. They could not hesitate in saying that a great deal remained to be done in the study of natural history in every district. The following, he thought, were some of the points which such a society should inquire into:—What is life, and how have the various species of animals and plants originated? Why do particular plants grow in particular localities? The determination of that question would have a most important bearing on geological theories. Another problem for study was what was the effect of dry or wet seasons on certain plants? If that question were settled, they might know the effect that must have been produced in bygone ages—by the alteration of climate—on certain plants and animals. Another most interesting subject for investigation was the influence of

plants on plants, animals on animals, and one on the other; the fertilisation of plants by insects, and the attractability of different colours for different insects. Other points recommended for study were the following:—The manner in which the habits of animals have been acquired; the manner in which varieties or species have been formed; the limit of the successive generation of insects through none but females; the diseases of plants due to parasitic fungi and insects.

THE first number of Petermann's *Mittheilungen* contains a brief account of the eruption of a new volcano in Chili, which occurred during part of last June and July. The volcano, known by the name of Lhagnell, is situated in the south of the country, in Arauco, between the volcanoes Villarico and Llama, near the river Cautin. Immense quantities of sand seem to have been thrown out, some of which, according to Dr. Philippi, of Santiago, reached a distance of 300 or 400 miles north from the volcano. This sand is described as consisting of angular, transparent green particles of volcanic glass. Dr. Philippi also reports that for fourteen days, about midday, a strong south wind blew, as far north as Santiago, small quantities of sand, much coarser than the above, with rounded corners, opaque and grey. Great quantities of lava, according to the report of a spectator, have overflowed the district, causing considerable destruction to life, and stopping up the river Quepe, which is thus being converted into a considerable lake.

WE have received a small pamphlet, by Mr. B. H. Babbage, containing a description of a portion of the late Mr. C. Babbage's calculating machine or difference engine, put together in 1833, and now being exhibited in the educational division of the South Kensington Museum.

La Revue Scientifique for February 15, gives a summary of the much needed administrative reforms which have been introduced into the Collège de France.

WE have received the following papers recently read before the Eastbourne Natural History Society:—"On *Geoglossum difforme* or Earth-tongue," by Mr. C. J. Muller; "A Note on the Wall Pelletory," by Mr. F. C. S. Roper; "On the Planet Venus," by Mr. T. Ryle.

THE principal articles in the *Quarterly Journal of Science* are:—"On the Probability of Error in Experimental Research," by Mr. Crookes; "Condition of the Moon's surface," by Mr. R. A. Proctor, with photograph; "Colours and their Relations," by Mr. Mungo Ponton; and "Remarks on the Present State of the Devonian Question," by Mr. H. B. Woodward.

THE *Annual of the Royal School of Naval Architecture, &c.*, contains some good technical papers. This publication will become vastly increased in importance, and we hope in value, by the establishment of the new school at Greenwich.

WE take the following from the *Engineer*:—"The question as to whether a gasometer will explode when fired was settled in Manchester on Tuesday, February 11, when one of the gasometers at the Manchester Corporation Gasworks in Rochdale-road was destroyed by fire. The origin of the fire is not known, but about 2 o'clock a workman saw flames issuing from one end of the gasometers, and the flames could not be checked till the whole contents of the gasometer, about 600,000 cubic feet of gas, had been consumed. Many inhabitants of the neighbourhood hurried away with loads of their furniture, fearing an explosion, but nothing of the kind occurred.

ADVICES from Cyprus state that no rain had fallen on the island for months; but this is probably an exaggeration.

WE learn from the *Athenæum* that the Rev. Thomas Hincks, F.R.S., is now engaged in preparing a "History of the British Polyzoa."

PROFESSOR RAMSAY ON LAKES

PROF. RAMSAY, F.R.S., delivered a course of six lectures to working men, on Monday evenings, commencing Jan. 5, 1873, in the Lecture Theatre of the Geological Museum. The subject of the course was "Lakes, fresh and salt: their origin, and distribution in geographical space and in geological time," and the following is an abstract of them:—

I. FRESHWATER LAKES, THEIR ORIGIN AND GEOGRAPHICAL DISTRIBUTION

There are many classes of lakes in the world, formed in various ways, and though he had been unjustly charged with ascribing all lakes to one origin, he would be the last person to do so. He then went on to examine the various means which might be supposed to produce lake basins, and especially that class of lakes scattered over the whole northern hemisphere—in Wales, Cumberland, Scotland, Sweden and Norway, Russia, and N. America—the basins of which had evidently been formed by the erosion and grinding out of portions of the earth's crust. In many cases these lakes are in true rock basins, surrounded by lips of rock. How were these hollows produced by Nature? The dislocations of the earth's crust could not produce them; as a rule the sides of faults are close together or the fissure is filled up with other matter, and the depressions due to synclinal curves were never so simple or perfect as these lake basins, owing to violent disturbances, and to subsequent denudation. The theory of a special area of subsidence for each lake seems absurd, on considering the vast numbers of separate lakes, in N. America for example, lying in some case within a mile or two of each other. Again, a lake cannot make its own hollow; what little motion there is in the water can only affect the waste of the shores. Neither can a river scoop out a lake hollow, it can only produce a long narrow channel, and go on widening and deepening that, and the sediment which it carries down into the lake will in the long run fill up the lake basin. The action of the sea, too, on its shores cannot scoop out a lake hollow, it can merely wear back its cliffs and form a "plain of marine denudation" just below the level of its waters. And thus having exhausted all the other natural agencies which effect the denudation of the land, what agency remains to us to account for the formations of these lake basins, but the grinding power of ice? The lecturer then adverted to the phenomena of the formation and progress of glaciers, illustrating his remarks by diagrams of the great Rhone glacier. In the Alpine valleys there are numerous indications—in the mammellated surface of the rocks, the striation, moraines, and boulders—that at some period in the past all these glaciers had been very much more extensive than at present, and were found in many parts where now they are altogether wanting. In Greenland the whole country is covered by a universal ice sheet, which extends into the sea in some cases several miles, and where cliffs of ice rise out of the sea 200 to 300 ft. high, and, as recent soundings have shown, are sometimes 3,000 ft. deep. Large masses of these breaking off float away as icebergs, bearing with them stones and rubbish which they deposit, on melting, irregularly over the sea bottom. In the mountains of Wales and Scotland, in the Vosges, the Black Forest range, and in N. America are numerous signs of glacier action, all which prove that at one period, recent in a geological sense, glaciers were present in those districts; and boulders and boulder clay deposits show also that the Northern part of the Northern hemisphere was passing through a glacial epoch.

Boulder clay and moraines have sometimes dammed up a stream of water and formed a lake, but lakes of that kind are neither numerous nor of much importance. The theory that the true rock basins were scooped out by glaciers first occurred to the lecturer whilst observing in N. Wales, and he applied it first to the explanation of the tarns about Snowdon, but extended observation of the Italian and other great lakes, and subsequently of the American lakes, warranted him in applying it to them also. He had especially applied it to the Lake of Geneva, which lies directly in the course of the old Rhone glacier. The lake is 983 ft. in depth in its deepest part, nearly in the centre. Where the glacier entered the lake it could not have been less than 3,000 ft. thick, and as the rock underneath is comparatively of a soft character, where the ice was thickest the grinding power was greatest, and it scooped out its deepest hollow; but towards the south end the mass had grown less through melting, and the result was a shallowing of the basin. It is in the valleys of Switzerland down which the glaciers must